WHAT IS CLAIMED IS:

1. A catalyst composition comprising:

a carrier;

a catalytically effective amount of silver; and,

a rubidium promoter comprising a quantity of from 5 µmole to up to 60 µmole per gram of catalyst composition.

2. The catalyst composition of claim 1, wherein the carrier comprises an α-alumina having a BET surface area of from 0.01 m^2/g to 50 m^2/g, and an apparent porosity of from 0.1 ml/g to 2 ml/g, measured by water absorption.

3. The catalyst composition of claim 1, wherein the carrier comprises a silver bonded calcium carbonate having a crush strength of at least 22 N.

4. The catalyst composition of claim 1, wherein the carrier comprises a silver bonded calcium carbonate wherein the weight ratio of silver to calcium carbonate is from 1:5 to 1:100.

5. The catalyst composition of claim 1, wherein the carrier comprises a silver bonded calcium carbonate having a specific surface area of from 1 m^2/g to 20 m^2/g.

6. The catalyst composition of claim 1, wherein the carrier comprises a silver bonded calcium carbonate having a specific surface area of from 1 m^2/g to 3 m^2/g.

7. The catalyst composition of claim 1, wherein the carrier comprises a silver bonded calcium carbonate having an apparent porosity of from 0.05 ml/g to 2 ml/g.

8. The catalyst composition of claim 1, wherein the carrier comprises a silver bonded calcium carbonate having an apparent porosity of from 0.1 ml/g to 1.5 ml/g.

9. The catalyst composition of claim 1, wherein the carrier comprises at least 95 %w α-alumina.

10. The catalyst composition of claim 9, wherein the α-alumina carrier has a pore size distribution within a total pore volume such that pores with diameters in the range of from 0.2 µm to 10 µm represent more than 75 % of the total pore volume; pores with diameters greater than 10 µm represent less than 20 % of the total pore volume; and pores with diameters less than 0.2 µm represent less than 10 % of the total pore volume.

11. The catalyst composition of claim 9, wherein the α-alumina carrier has a pore size distribution such that pores with diameters in the range of from 0.2 µm to 10 µm represent more than 90 % of the total pore volume; pores with diameters greater than 10 µm represent less than 10 % of the total pore volume; and pores with diameters less than 0.2 µm represent less than 7 % of the total pore volume.

12. The catalyst composition of claim 9, wherein the α-alumina carrier has a surface area of at most 2.9 m^2/g.

13. The catalyst composition of claim 9, wherein the α-alumina carrier has a water absorption of at least 0.35 ml/g and a surface area in the range of from 1.4 m^2/g to 2.6 m^2/g.

14. The catalyst composition of claim 9, wherein the α-alumina carrier is made by a method which comprises:

forming a mixture comprising:

(a) from 50 %w to 90 %w of a first particulate α-alumina having an average particle size of from more than 10 μm up to 100 μm; and

(b) from 10 %w to 50 %w of a second particulate α-alumina having an average particle size of from 1 μm to 10 μm; the %w being based on the total weight of α-alumina in the mixture; and,

firing the mixture to form the carrier.

15. The catalyst composition of claim 14, wherein the α-alumina carrier comprises:

(a) from 65 %w to 75 %w, relative to the total weight of α-alumina in the mixture, of a first particulate α-alumina having an average particle size of from 11 μm to 60 μm;

(b) from 25 %w to 35 %w, relative to the total weight of α-alumina in the mixture, of a second

particulate α-alumina having an average particle size of from 2 μm to 6 μm;

(c) from 2 %w to 5 %w of an alumina hydrate, calculated as aluminum oxide relative to the total weight of α-alumina in the mixture;

(d) from 0.2 %w to 0.8 %w of an amorphous silica compound, calculated as silicium oxide relative to the total weight of α-alumina in the mixture; and,

(e) from 0.05 %w to 0.3 %w of an alkali metal compound, calculated as the alkali metal oxide relative to the total weight of α-alumina in the mixture.

16. A process for the oxidation of an olefin, which process comprises reacting the olefin with oxygen in the presence of a catalyst composition comprising a carrier; a catalytically effective amount of silver; and, a rubidium promoter, wherein the rubidium metal promoter comprises a quantity of from 5 μmole to up to 60 μmole per gram of catalyst composition.

17. The process of claim 16, wherein the carrier comprises a silver bonded calcium carbonate having a crush strength of at least 22 N.

18. The process of claim 16, wherein the carrier comprises a silver bonded calcium carbonate wherein the weight ratio of silver to calcium carbonate is 1:9.

19. The process of claim 16, wherein the carrier comprises a silver bonded calcium carbonate having a specific surface area of from 1 m^2/g to 20 m^2/g.

20. The process of claim 16, wherein the carrier comprises a silver bonded calcium carbonate having a specific surface area of from 1 m^2/g to 3 m^2/g.

21. The process of claim 16, wherein the carrier comprises a silver bonded calcium carbonate having an apparent porosity of from 0.05 ml/g to 2 ml/g.

22. The process of claim 16, wherein the carrier comprises a silver bonded calcium carbonate having an apparent porosity of from 0.1 ml/g to 1.5 ml/g.

23. The process of claim 16, wherein the carrier comprises an α-alumina carrier which has been obtained by a method which comprises:

forming a mixture comprising:

(a) from 50 %w to 90 %w of a first particulate α-alumina having an average particle size of from more than 10 μm up to 100 μm; and,

(b) from 10 %w to 50 %w of a second particulate α-alumina having an average particle size of from 1 μm to10 μm; and wherein the %w is based on the total weight of α-alumina in the mixture;

forming the mixture into shaped bodies; and,

firing the shaped bodies to form the carrier.

24. The process of claim 16, wherein the carrier comprises an α-alumina carrier having a pore size distribution in a total pore volume such that pores with diameters in the range of from 0.2 μm to 10 μm represent more than 75 % of the total pore volume; pores with diameters greater than 10 μm represent less than 20 % of the total pore volume; and pores with diameters less than 0.2 μm represent less than 10 % of the total pore volume.

25. The process of claim 16, wherein the carrier comprises an α-alumina carrier having a pore size distribution in a total pore volume such that pores with diameters in the range of from 0.2 μm to 10 μm comprise more than 90 % of the total pore volume; pores with diameters greater than 10 μm represent less than 10 % of the total pore volume; and pores with diameters less than 0.2 μm represent less than 7 % of the total pore volume.

26. The process of claim 16, wherein the carrier comprises an α-alumina carrier having a surface area of at most 2.9 m^2/g.

27. The process of claim 16, wherein the carrier comprises an α-alumina carrier having a water absorption of at least 0.35 ml/g and a surface area in the range of from 1.4 m^2/g to 2.6 m^2/g.

28. The process of claim 16, wherein the carrier comprises an α-alumina carrier made by a method which comprises:

forming a mixture comprising:

(a) from 50 %w to 90 %w of a first particulate α-alumina having an average particle size of from more than 10 μm up to 100 μm; and

(b) from 10 %w to 50 %w of a second particulate α-alumina having an average particle size of from 1 μm to 10 μm; the %w being based on the total weight of α-alumina in the mixture; and,

firing the mixture to form the carrier.

29. The process of claim 16, wherein the carrier comprises an α-alumina carrier having a composition comprising:

(a) from 65 %w to 75 %w, relative to the total weight of α-alumina in the mixture, of a first particulate α-alumina having an average particle size of from 11 μm to 60 μm;

(b) from 25 %w to 35 %w, relative to the total weight of α-alumina in the mixture, of a second particulate α-alumina having an average particle size of from 2 %w to 6 %w;

(c) from 2 %w to 5 %w of an alumina hydrate, calculated as aluminum oxide relative to the total weight of α-alumina in the mixture;

(d) from 0.2 %w to 0.8 %w of an amorphous silica compound, calculated as silicium oxide relative to the total weight of α-alumina in the mixture; and,

(e) from 0.05 %w to 0.3 %w of an alkali metal compound, calculated as the alkali metal oxide relative to the total weight of α-alumina in the mixture.

30. The process of claim 16, which process further comprises adding an organic chloride promoter.

31. The process of claim 30, wherein the organic chloride promoter is present at a concentration of at least 50 ppm by volume.

32. The process of claim 16, which process further comprises adding a NO_x promoter, wherein x is 1 or 2.

33. The process of claim 32, wherein the NO_x promoter is present at a concentration of 500 ppm by volume.

34. A composition comprising propylene oxide, made by a process comprising reacting propylene with oxygen in the presence of a catalyst composition comprising silver and a rubidium promoter deposited on a carrier, wherein the rubidium metal promoter comprises a quantity of from 30 μmole to 50 μmole per gram of catalyst composition

35. A composition comprising a derivative of propylene oxide, wherein the propylene oxide is made by a process comprising reacting propylene with oxygen in the presence of a catalyst composition comprising a carrier; a catalytically effective amount of silver; and, a rubidium promoter deposited on a carrier, wherein the

rubidium metal promoter comprises a quantity of from 5 μmole to up to 60 μmole per gram of catalyst composition.